APPENDIX A

Vegetation Composition, Age Class, and MIH Objectives by Landscape Ecosystem

This section combines the detailed information from the species composition and age class distribution report with the detailed information on MIHs. It updates the landscape ecosystem objectives displayed in Tables in Chapter 2 of the Forest Plan. The organization of this section presents Forest-wide figures for species compositions and age class distributions followed by more detailed information for each of the Landscape Ecosystems (LEs).

A. Forest-wide Vegetation Composition

Table A-1. Forest-wide Vegetation composition Objectives for *Uplands* in the Minnesota Drift and Lake Plains Section. (Reference: Forest Plan, Table DLP-2, p. 2-57)

Forest Types	2003		2011		10-yr Obj. %	20-yr Obj. %	100-yr Obj. %	% difference from 2009-10-yr obj.
	Acres	%	Acres	%				
Jack pine	14500	6	10,954	2.5	5	6	6	-2.5
red pine	73900	16	71,730	16.5	17	17	19	-.5
white pine	4600	1	5,576	1.3	2	3	6	-.7
spruce-fir	28400	6	22,212	5.1	7	8	9	-1.9
oak	9500	2	7,026	1.6	2	2	2	-.4
Northern hardwoods	59900	13	78,570	18.3	15	16	17	+3.3
aspen	226400	50	208,022	47.7	45	42	32	+2.7
paper birch	38100	8	31,586	7.2	8	7	9	-.8
TOTAL	455,500	100	435,676	100	100	100	100	

This table does not incorporate figures for White Cedar Swamp and Wet Sedge Meadow because they are lowland areas and have had little or no harvest.

Based on numbers from the above table, the following shifts in acres need to occur to meet the 10 year forest-wide objectives.

Table A-2. Shifts needed in forest types.

Forest Types	Direction of Shift	Acres
jack pine	Increase	10,829
red pine	Increase	2,335
white pine	Increase	3,138
spruce-fir	Increase	8,285
oak	Increase	1,687
paper birch	Increase	3,268
Northern hardwoods	Decrease	13,219
aspen	Decrease	11,968

The following table shows where species shifts need to occur relative to the LEs.

Table A-3. Need to maintain (m), increase (+), or decrease (-) acres based on comparing 2011 percentages to Decade 1 percentages for each LE (reference tables: Forest Plan pp 2-57 through 2-79).

	Landscape Ecosystem						
	Hardwood LEs		Pine LEs			Lowland LEs	
Forest Type	**BHC**	**MNH**	**DP**	**DMP**	**DMPO**	**TS**	**WCS**
Uplands							
Jack pine	-	m	+	m	+	m	n/a
red pine	m	m	-	m	+	m	m
white pine	+	m	m	+	m	m	n/a
spruce-fir	+	+	m	+	+	+	+
oak	m	m	-	+	m	-	m
Northern hardwoods	-	-	-	-	-	-	+
aspen	-	+	-	-	-	-	-
paper birch	m	+	-	+	-	-	-
ACRES	100,000	64,751	11,918	82,812	157,616	19,611	
Lowlands							
black spruce	+	+	+	+	+	+	m
tamarack	-	m	-	m	-	-	m
lowland hardwoods	-	-	+	-	m	+	+
white cedar	m	m	m	m	m	m	m
ACRES	31,199	6,703	405	7,475	20,243	31,077	12,883

Hardwood LEs: BHC- Boreal Hardwood Conifer MNH – Mesic Northern Hardwood
Pine LEs: DP – Dry Pine DMP – Dry Mesic Pine DMPO – Dry-Mesic Pine/Oak
Lowland LEs: TS – Tamarack Swamp WCS – White Cedar Swamp

Based on information in the above tables to meet the 10 year objectives, the Forest needs to

- **<u>Increase</u>** the amount of jack pine, red pine, white pine, spruce-fir, oak and paper birch on the landscape.
    - Jack pine has decreased since 2003. Jack pine/red pine stands typed as jack pine have shifted to red pine as jack pine has been harvested or died. The Forest needs to almost double the amount of jack pine from the 2011 numbers to achieve 5% of the landscape in jack pine. This would result in an increase in acres from about 11,000 currently to 22,000 primarily in the Dry Pine and Dry-Mesic Pine/Oak LEs. Possibilities include conversion of red pine, aspen, or birch stands to jack pine.

      Jack pine has been difficult to get established due to hazel competition; shoot blights (e.g. *Diplodia*), and rabbits/hares. The Forest has also shifted to seeding jack pine to move away from the plantation look to a more random and diverse spacing and to increase natural function, especially with more "doghair" stands. However, the success of seeding has not yet been determined because it takes to harvest stands under contract, prepare the sites for regeneration, and allow time for germination, establishment and growth.

- Red pine has slightly increased since 2003. Yet it will take approximately 2200 acres of additional red pine to meet the 17% forest-wide objective. Additionally more acres may be needed if red pine stands are converted to increase the amount of jack pine. Increases need to occur in the Dry-Mesic Pine/Oak LE. It would be possible to convert aspen and birch stands to red pine to move towards this objective.

- White pine stands are not common. Our focus on increasing the white pine component within stands doesn't make them a white pine forest type. Another 3,050 acres will be needed primarily in the Boreal Hardwood Conifer and Dry Mesic Pine LEs by the end of the decade to achieve the 2% forest–wide objective.

- Increasing the amount of spruce-fir is an objective in most of our vegetation projects. Another 8300 acres of spruce-fir across all the LEs will be needed to meet the 7% objective by the end of the first decade. Sometimes this can be achieved by releasing existing components in the lower canopy layers of stands. In many instances, seeding of spruce-fir is planned after harvest. Results from these efforts won't be evident for several years yet because of the time it takes to harvest stands under contract, prepare the sites for regeneration, and allow time for regeneration establishment and growth.

- Virtually no harvest has occurred in the oak forest type. The oak component within stands is often designated for retention but still comprises a minor component of the stand composition. Additional acres of the oak forest type would be most suited in the Dry Mesic Pine LE. Conversions to oak thus far have been minimal.

- Paper birch has declined since 2003. An additional 3500 acres is needed to meet the 10 year objective. LEs best suited for paper birch Dry Mesic Pine and Mesic Northern Hardwood. Paper birch should decrease in the Dry Pine and Dry Mesic Pine/Oak LEs by about 1600 acres.

- **Decrease** northern hardwoods and aspen on the landscape.
  - Northern hardwoods are increasing and are expected to continue to do so. An increase resulted several years ago from stand re-delineation, recent stand inventory, and management activities. Presently, a decrease of 14, 377 acres is needed across all LEs to meet decadal objectives but this may be a conservative estimate. This number is expected to be higher by the end of the decade because many aspen stands are planned for conversion to northern hardwoods. This aspen conversion works with species on site and is relatively easy and cheap to accomplish.

  - Decreasing the amount of aspen on the landscape is a short and long term goal. Roughly 50% of the upland landscape is in the aspen forest type. To make a shift of 2.7% requires a change on about 11,763 acres which should occur on all LEs except for the Mesic Northern Hardwood LE. The most cost effective

conversions are those where other species on site could be managed in the future, such as northern hardwoods as discussed above. Otherwise aspen conversions are costly and require extensive site preparation, planting, and stand tending.

- Harvest treatments that affect species composition for Decade 1 have already been planned and are under timber sale contract. As implementation occurs, acres and percentages will change. Current planning efforts and those that occur during the remainder of Decade 1 will affect the objectives specified for Decade 2.

B. Forest-wide Age Class Objectives

The following table contains the objectives and 2003 acres and percentages in Table DLP-3 (FP, p. 2-58) and compares them to numbers for 2001 and 2001+5. The 2011 numbers reflect what is currently on the ground, whereas the 2011+5 numbers reflect acres in projects planned but not yet harvested.

Table A-4. Forest-wide Age Class Objectives from Table DLP-3 (FP, p 2-58), 2011, 2011+5 and acres and percentages.

Age Class	2003		2011		Objectives		% difference from 2011 to Decade 1	2011 + 5 yrs	
					Decade 1	Decade 2			
UPLANDS	Acres	%	Acres	%	%	%		Acres	%
0-9	38,000	8	17,085	4	8	8	-4	20,585	5
10-49	191,800	42	197,673	44	49	48	-5	191,740	43
50-99	192,000	42	182,935	41	33	29	8	171,774	38
100-149	31,700	7	45,266	10	9	13	1	57,771	13
150+	2,200	0	4,455	1	1	1	--	5,526	1
TOTAL	455,500	100	447,414	100	100	100		447,397	100
LOWLANDS									
0-9	600	1	630	1	4	4	-3	936	1
10-49	5,200	5	6,340	6	5	7	1	5,293	5
50-99	41,600	43	37,341	37	31	18	6	31,269	31
100-149	46,900	48	50,356	49	55	60	-6	54,026	53
150+	3,300	3	7,260	7	5	10	2	9,722	10
TOTAL	97,700	100	101,927	100	100	100		101,246	100

- The Forest is roughly creating half of the 0-9 age class the Forest Plan projected. Although this is up slightly when looking at the projects planned but not yet accomplished (2011+5), it is still well below the projected 8%.

- The Forest is well over the amount of 50-99 the Forest Plan projected. The gap widens in 5 years (2011+5) due to a decrease in the percentage for Decade 2. Since most of the Forest species reach CMAI in this age class (FP, p. 2-20), there may be opportunities to increase the amount of even-aged harvests which would decrease this age class and

increase the amount of 0-9. The Forest is also exceeding objectives for the 100-149 age class but not to the degree that a shift needs to occur.

C. Vegetation Composition, Age Class, and MIH Objectives by Landscape Ecosystem

Species composition and age class acres and percentages for 2011 are compared to Decade 1 objectives for each LE. The 2003 numbers are taken from tables in the Forest Plan on pages 2-60 through 2-74 and are included to provide a context for the shift and trends since the 2004 FP went into effect. The 2011 acres and percentages reflect what is accomplished and on the ground. For the age class tables, the 2011+5 column captures acres planned for harvest but have yet to be accomplished. It is assumed they will be accomplished in 5 years which places them in Decade 2. Generally if movement is towards meeting Decade 1 objectives, then the Forest is on trajectory for meeting Decade 2 objectives. Lowlands are not discussed because so little harvest has occurred in them. Shifts tend to be a function of succession, re-typing, and stand inventory rather than active management.

Based upon the forest types and age groupings for MIH, acres occurring in each of the MIHs were calculated early in 2011 (data source: GIS Corporate Stands Layer). Additionally, because many of the recent land management decisions made through project-specific Environmental Analyses have yet to be implemented, a second set of acres occurring in each of the MIHs were calculated for five years out (2016). The 2016 data have been aged out for 5 years, by which time it is anticipated that most of these projects will have been implemented. The 2016 data include all planned but not yet implemented timber harvests from vegetation management projects to date. The calculations were completed for each landscape ecosystem (LE) and forest-wide. The acreage amount in each MIH category was then compared to the corresponding amount that occurred with the initiation of the 2004 Forest Plan to determine the current trajectory for that particular MIH.

Comparisons were made at the LE level to determine if the MIH trends were on track to meet the stated objectives for the first two decades of Forest Plan implementation (CNF Forest Plan, pages 2-53 thru 2-80) because 2016 data would move beyond the end of the first decade (2014) and slightly into the second decade. The results are provided for each LE below. Decadal Forest Plan objectives are expressed in terms of desired change from 2004 condition: increase (+), decrease (-), or maintain (m). Trends are expressed in the same manner, with those trends that depart from the objective shown in red with the cell highlighted grey. Bullets following the tables are used to highlight notable departures from Forest Plan objectives.

Dry Pine Landscape Ecosystem

Table DRP-1. Vegetation Composition Objectives for Dry Pine Landscape Ecosystem.

Forest Type	FP 2003		2011		Objectives		% difference from 2011 to Decade 1
					Decade 1	Decade 2	
UPLANDS	Acres	%	Acres	%	%	%	
Jack Pine	3300	27	2579	22	35	41	-13
Red Pine	4900	41	4942	41	39	37	+2
White Pine	200	1	221	2	2	2	--
Spruce-fir	200	1	123	1	1	2	--
Oak	400	3	504	4	3	3	+1
Northern Hdwds	100	1	347	3	1	1	+2
Aspen	2700	23	2670	22	16	12	+6
Paper Birch	300	2	533	4	2	2	+2
TOTAL	12,100	100	11,918	100	100	100	
LOWLANDS							
Black Spruce	300	71	222	55	71	71	-16
Tamarack	100	13	63	16	13	13	+3
Lowland Hdwds	100	13	38	9	13	13	-4
White Cedar	<100	3	83	20	3	3	+17
TOTAL	400	100	405	100	100		

Table DRP-2. Vegetation Age Class Objectives for Dry Pine Landscape Ecosystem.

Age Class	2003		2011		Objectives		% difference from 2011 to Decade 1	2011 + 5 yrs	
					Decade 1	Decade 2			
UPLANDS & LOWLANDS	Acres	%	Acres	%	%	%		Acres	%
0-9	1800	14	799	6	12	10	-6	663	5
10-39	5000	40	4906	40	45	45	-5	4762	39
40-79	4700	37	3687	30	24	28	+6	3238	26
80-179	1100	8	2927	24	19	17	+5	3657	30
180+	0	0	3	0	0	0	--	3	0
TOTAL	12,500	100	12,323	100	100	100		12,323	100

To meet Decade 1 objectives:

- Increase jack pine acres by approximately 1600 acres which can only be accomplished by conversions of red pine, paper birch and aspen to jack pine. Decrease red pine by about 300 acres; convert these acres to jack pine

- Decrease aspen approximately 800 acres. Converting these acres to jack pine would be ideal if economically and technically feasible to accomplish.

- Increase the 0-9 and 10-39 age classes almost 750 acres each by decreasing the 40-79 and 80-179 age classes by comparable amounts.
- 1600 acres more of the jack pine forest type is needed and can only be achieved through even-aged regeneration harvest which creates 0-9.

Table DRP-3a. Young Seedling Management Indicator Habitat Objectives for Dry Pine Landscape Ecosystem.

Management Indicator Habitat for Dry Pine Landscape Ecosystem Young Seedling Open (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	2200	-	799	-	-	663	-
2	Upland deciduous	500	-	322	-	-	414	-
3	Northern hardwoods	0	m	55	+	m	44	+
4	Aspen-birch	500	-	267	-	-	370	-
5	Upland conifer	1700	-	478	-	-	249	-
6	Upland spruce-fir	0	m	0	m	m	12	+
7	Red and white pine	300	-	96	-	-	131	-
8	Jack pine	1400	+	382	-	-	106	-
9	Lowland black Spruce-tamarack	0	m	5	+	m	0	m

Table DRP-3b. Mature Management Indicator Habitat Objectives for Dry Pine Landscape Ecosystem.

Management Indicator Habitat for Dry Pine Ecosystem Mature (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	2700	-	3115	+	+	3244	+
2	Upland deciduous	1300	-	1143	-	-	1072	-
3	Northern hardwoods	100	m	713	+	m	722	+
4	Aspen-birch	900	-	430	-	-	350	-
5	Upland conifer	1400	+	1972	+	+	2172	+
6	Upland spruce-fir	0	m	26	+	m	14	+
7	Red and white pine	1200	+	1924	+	+	2143	+
8	Jack pine	200	-	22	-	-	15	-
9	Lowland black Spruce-tamarack	200	m	170	-	-	153	-

Table DRP-3c. Old/Old Growth and Multi-aged Management Indicator Habitat Objectives for Dry Pine Landscape Ecosystem

Management Indicator Habitat for Dry Pine Landscape Ecosystem Old/Old Growth and Multi-aged (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	1700	-	1732	+	-	1794	+
2	Upland deciduous	100	+	625	+	+	666	+
3	Northern hardwoods	0	m	13	+	m	13	+
4	Aspen-birch	100	+	613	+	+	653	+
5	Upland conifer	1600	m	1107	-	-	1128	-
6	Upland spruce-fir	0	m	33	+	m	33	+
7	Red and white pine	100	m	46	-	m	46	-
8	Jack pine	1500	-	1028	-	-	1049	-
9	Lowland black Spruce-tamarack	100	m	58	-	+	75	-

The Dry Pine LE is the smallest LE on the Chippewa National Forest, containing the smallest amount of upland acres of any of the LE's. This situation suggests some MIH's may be relatively uncommon or rare.

MIH trends generally track in the desired directions. Notable exceptions include:

- Young jack pine habitat is lacking in decade 1. The Dry Pine LE likely provides some of the most suitable sites on the Chippewa for jack pine conversion or regeneration to occur. However, the relatively small size of the LE limits opportunities. More opportunities are provided by the DMPO LE.
- Old/old growth and multi-aged red/white pine is currently declining rather than maintaining as desired.
- Mature and old+ lowland black spruce-tamarack is declining rather than maintaining or increasing as desired.

Mature northern hardwoods are increasing rather than maintaining. This is primarily a product of stand database updates and recent stand inventory, as was indicated in the FY2008 CNF Monitoring and Evaluation Report.

Dry-Mesic- Pine Landscape Ecosystem

Table DMP-1. Vegetation Composition Objectives for Dry-Mesic- Pine Landscape Ecosystem.

Forest Type	FP 2003		2011		Objectives		% difference from 2011 to Decade 1.
					Decade 1	Decade 2	
UPLANDS	Acres	%	Acres	%	%	%	%
Jack Pine	1200	1	713	1	1	1	--
Red Pine	13000	15	12168	15	15	16	--
White Pine	800	1	1203	1	4	6	-3
Spruce-fir	4000	5	2997	4	8	9	-4
Oak	5100	6	3235	4	6	6	-2
Northern Hdwds	12300	15	17678	22	15	15	+7
Aspen	38800	46	36967	45	41	37	+4
Paper Birch	9100	11	6849	8	10	10	-2
TOTAL	84,300	100	81,812	100	100	100	
LOWLANDS							
Black Spruce	3600	53	3266	44	53	53	-9
Tamarack	600	9	703	9	9	9	--
Lowland Hdwds	1600	24	2146	29	24	24	+5
White Cedar	900	13	1361	18	13	13	+5
TOTAL	6700	100	7,475	100	100	100	

Table DMP-2. Vegetation Age Class Objectives for Dry-Mesic- Pine Landscape Ecosystem.

Age Class	2003		2011		Objectives		% difference from 2011 to Decade 1	2011 + 5 yrs	
					Decade 1	Decade 2			
UPLANDS	Acres	%	Acres	%	%	%		Acres	%
0-9	6800	8	3658	4	9	9	-5	2665	3
10-39	29900	36	25084	31	37	40	-6	23068	28
40-79	29700	35	25364	31	27	22	+4	19993	24
80-179	17800	21	27587	34	27	29	+7	35966	44
180+	<100	0	119	0	0	0	--	141	0
TOTAL	84,300	100	81,812	100	100	100		81833	100
LOWLANDS									
0-9	<100	0	76	1	4	4	-3	8	0
10-39	300	4	250	3	3	5	--	289	4
40-79	1200	18	847	11	7	5	+4	542	7
80-119	3800	57	4273	57	57	45	--	4245	57
120-179	1300	19	1927	26	28	38	-2	2253	30
180+	100	1	102	1	2	2	-1	137	2
TOTAL	6700	100	7475	100	100	100		7475	100

To meet Decade 1 objectives:

- The largest species shifts need to be increases in spruce-fir (3550 acres), white pine (2000 acres), oak (1700 acres), and paper birch (1350 acres).
- Both the northern hardwoods (5400 acres) and aspen (3400 acres) will require significant decreases through conversions to meet decadal objectives.

- Increases are needed in the upland 0-9 age class (3700 acres) which can only be accomplished through even-aged harvest. In 5 more years, there is a greater decline (by 1000 acres) and departure in this age class.
- An increase is desired in the 10-39 age class (5200 acres) and will occur naturally through ingrowth from the 0-9 age class. However, these acres decline by the early part of Decade 2.

Table DMP-3a. Young Seedling Management Indicator Habitat Objectives for Dry-Mesic- Pine Landscape Ecosystem.

Management Indicator Habitat for Dry-Mesic Pine Landscape Ecosystem Young Seedling Open (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	9,500	-	3658	-	-	2665	-
2	Upland deciduous	8,200	-	3139	-	-	2360	-
3	Northern hardwoods	600	-	859	+	-	330	-
4	Aspen-birch	7,200	-	2280	-	-	2030	-
5	Upland conifer	1,200	+	519	-	m	305	-
6	Upland spruce-fir	500	-	87	-	-	21	-
7	Red and white pine	400	+	404	+	+	205	-
8	Jack pine	300	-	28	-	+	79	-
9	Lowland black Spruce-tamarack	100	+	39	-	+	19	-

Table DMP-3b. Mature Management Indicator Habitat Objectives for Dry-Mesic Pine Landscape Ecosystem

Management Indicator Habitat for Dry-mesic Pine Landscape Ecosystem Mature (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	35,200	-	32037	-	-	29274	-
2	Upland deciduous	28,300	-	25040	-	-	20886	-
3	Northern hardwoods	10,500	-	17302	+	-	16987	+
4	Aspen-birch	13,700	-	7738	-	-	3899	-
5	Upland conifer	6,900	+	6997	+	+	8389	+
6	Upland spruce-fir	1,200	+	1047	-	+	1073	-
7	Red and white pine	5,600	+	5950	+	+	7315	+
8	Jack pine	200	-	1	-	-	1	-
9	Lowland black Spruce-tamarack	3,000	-	2487	-	-	2359	-

Table DMP-3c. Old/Old Growth and Multi-aged Management Indicator Habitat Objectives for Dry-mesic Pine Landscape Ecosystem

Management Indicator Habitat for Dry-Mesic Pine Landscape Ecosystem Old/Old Growth and Multi-aged (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	7,800	+	12969	+	+	17113	+
2	Upland deciduous	6,800	+	11835	+	+	15622	+
3	Northern hardwoods	800	+	1495	+	+	1792	+
4	Aspen-birch	5,600	+	10340	+	+	13830	+
5	Upland conifer	1,000	+	1134	+	+	1491	+
6	Upland spruce-fir	200	+	258	+	+	356	+
7	Red and white pine	100	+	422	+	+	748	+
8	Jack pine	700	+	454	-	-	387	-
9	Lowland black Spruce-tamarack	800	+	1085	+	+	1274	+

Objectives for upland forest MIH's are generally to decrease the youngest and mature, and increase the old/oldgrowth/multi-aged class.

- Objectives are generally being achieved, except mature northern hardwoods have increased. This is primarily a product of stand database updates and recent stand inventory, as was indicated in the FY2008 CNF Monitoring and Evaluation Report.

- Jack pine is a concern in both the youngest and oldest MIH's. Very little young is being established; no mature remains (per FP direction); and old/oldgrowth/multi-aged class declined earlier than planned.

Dry-Mesic- Pine/Oak Landscape Ecosystem

Table DPO-1. Vegetation Composition Objectives for Dry-Mesic-Pine/Oak Landscape Ecosystem.

Forest Type	FP 2003		2011		Objectives		% difference from 2011 to 10-yr obj
					Decade 1	Decade 2	
UPLANDS	Acres	%	Acres	%	%	%	
Jack Pine	9200	6	6832	4	9	11	-5
Red Pine	48900	30	47734	30	31	33	-1
White Pine	2500	2	2909	2	2	2	--
Spruce-fir	7000	4	5577	4	5	4	-1
Oak	2900	2	2482	2	2	2	--
Northern Hdwds	13300	8	17176	11	10	11	+1
Aspen	65700	40	63067	40	34	30	+6
Paper Birch	13700	8	11839	8	7	7	+1
TOTAL	163,200	100	157,616	100	100	100	
LOWLANDS							
Black Spruce	10100	52	9956	49	52	52	-3
Tamarack	2800	15	3139	16	15	15	+1
Lowland Hdwds	3500	18	3570	18	18	18	--
White Cedar	2900	15	3578	18	15	15	+3
TOTAL	19,200	100	20,243	100	100	100	

Table DPO-2. Vegetation Age Class Objectives for Dry-Mesic Pine/Oak Landscape Ecosystem.

Age Class	2003		2011		Objectives		% difference from 2011 to Decade 1.	2011 + 5 yrs	
					Decade 1	Decade 2			
UPLANDS	Acres	%	Acres	%	%	%		Acres	%
0-9	12700	8	5034	3	9	9	-6	7507	5
10-39	58400	36	50983	32	35	34	-3	45214	29
40-79	45600	28	41978	27	24	25	+3	41164	26
80-119	41500	25	50968	32	27	24	+5	53098	34
120-179	4400	3	7797	5	5	8	--	9659	6
180+	700	0	847	1	1	1	--	877	1
TOTAL	163,200	100	157,616	100	100	100		157527	100
LOWLANDS									
0-9	100	1	66	0	2	3	-2	54	0
10-39	800	4	850	4	4	5	--	812	4
40-79	3300	17	2467	12	10	6	+2	1969	10
80-119	11200	58	10871	54	53	38	+1	10042	50
120-179	3600	19	5789	29	30	46	-1	7090	35
180+	100	1	200	1	1	2	--	219	1
TOTAL	19,200	100	20,243	100	100	100		20188	100

To meet Decade 1 objectives:

- Increase upland jack pine by 7352 acres doubling the existing amount. This would be difficult and expensive to accomplish given that surpluses are in the aspen, northern hardwood, and birch forest types.
- Increase upland red pine and spruce-fir by about 1600 acres each.
- Decrease upland aspen by 9500 acres.
- Decrease upland northern hardwoods and paper birch about 1600 acres each.

- Increase the upland 0-9 age class by 9150 acres.
- Increase the upland 10-39 age class by 4200 acres. Given ingrowth from the 0-9 age class of about 5000 acres, the 10-39 age class would not be achievable for Decade 1.
- Decrease the upland 40-79 age class by 4150 acres. This could be achieved by regenerating mature stands within this age class.
- Decrease the upland 80-119 age class by 8400 acres. Even-aged regeneration harvests would contribute substantially to the 0-9 age class.

Table DPO-3a. Young Seedling Management Indicator Habitat Objectives for Dry-mesic Pine/Oak Landscape Ecosystem.

Management Indicator Habitat for Dry-Mesic Pine/Oak Landscape Ecosystem Young Seedling Open (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	17,500	-	5034	-	-	7508	-
2	Upland deciduous	11,200	-	3224	-	-	5556	-
3	Northern hardwoods	300	-	178	-	-	213	-
4	Aspen-birch	10,800	-	3046	-	-	5343	-
5	Upland conifer	6,300	+	1810	-	+	1952	-
6	Upland spruce-fir	700	-	183	-	-	325	-
7	Red and white pine	2,600	-	695	-	m	775	-
8	Jack pine	3,000	+	932	-	+	852	-
9	Lowland black Spruce-tamarack	300	+	166	-	+	137	-

Table DPO-3b. Mature Management Indicator Habitat Objectives for Dry-mesic Pine/Oak LE

Management Indicator Habitat for Dry-Mesic Pine/Oak Landscape Ecosystem Mature (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	63,000	-	56171	-	-	54181	-
2	Upland deciduous	32,800	-	27424	-	-	24399	-
3	Northern hardwoods	10,800	+	15282	+	+	14733	+
4	Aspen-birch	19,700	-	12141	-	-	9666	-
5	Upland conifer	30,200	-	28748	-	+	29782	-
6	Upland spruce-fir	2,300	m	1584	-	-	1461	-
7	Red and white pine	27,300	-	27056	-	+	28166	+
8	Jack pine	600	-	108	-	-	155	-
9	Lowland black Spruce-tamarack	9,500	-	8316	-	-	7498	-

Table DPO-3c. Old/Old Growth and Multi-aged Management Indicator Habitat Objectives for Dry-Mesic Pine/Oak Landscape Ecosystem

Management Indicator Habitat for Dry-Mesic Pine/Oak Landscape Ecosystem Old/Old Growth and Multi-aged (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	19,600	+	30070	+	+	32844	+
2	Upland deciduous	11,500	-	20001	+	-	21811	+
3	Northern hardwoods	1,100	+	2406	+	+	3251	+
4	Aspen-birch	9,900	-	17595	+	-	18560	+
5	Upland conifer	8,100	+	10068	+	+	11033	+
6	Upland spruce-fir	300	+	744	+	+	945	+
7	Red and white pine	3,500	+	6254	+	+	7412	+
8	Jack pine	4,300	-	3070	-	-	2676	-
9	Lowland black Spruce-tamarack	1,800	+	3401	+	+	4233	+

A very large Landscape Ecosystem on the Chippewa National Forest, the Dry-Mesic Pine/Oak (DMPO) LE contains more upland acres than any other LE.

- Objectives reflect a desire to increase the very oldest spruce-fir and red/white pine MIH's, which is generally occurring. However, the oldest aspen-birch is also increasing, when the objective is to decrease.
- Young jack pine is very lacking. Coupled with substantial declines in older jack pine (per FP direction), this habitat component is really decreasing in the largest of LE's.

Boreal Hardwood/Conifer Landscape Ecosystem

Table BHC-1. Vegetation Composition Objectives for Boreal Hardwood/ Conifer Landscape Ecosystem.

Forest Type	FP 2003		2011		Objectives		% difference from 2011 to Decade 1
					Decade 1	Decade 2	
UPLANDS	Acres	%	Acres	%	%	%	
Jack Pine	500	0	513	1	0	0	+1
Red Pine	3700	4	3554	4	4	4	--
White Pine	600	1	664	1	3	4	-2
Spruce-fir	11000	11	8662	9	12	13	-3
Oak	100	0	42	0	0	0	--
Northern Hdwds	11800	11	16247	16	13	13	+3
Aspen	68400	66	64351	64	63	60	+1
Paper Birch	6900	7	5965	6	6	6	--
TOTAL	102,900	100	100,000	100	100	100	
LOWLANDS							
Black Spruce	14800	49	13450	43	49	49	-6
Tamarack	2400	8	2860	9	8	8	+1
Lowland Hdwds	9800	32	10592	34	32	32	+2
White Cedar	3300	11	4296	14	11	11	+3
TOTAL	30,300	100	31,199	100	100	100	

Table BHC-2. Vegetation Age Class Objectives for Boreal Hardwood/Conifer Landscape Ecosystem.

Age Class	2003		2011		Objectives		% difference from 2011 to Decade 1	2011 + 5 yrs	
					Decade 1	Decade 2			
UPLANDS	Acres	%	Acres	%	%	%		Acres	%
0-9	8900	9	3815	4	9	10	-5	6249	6
10-39	48700	47	45050	45	47	45	-2	39601	40
40-79	28800	28	26031	26	25	23	+1	24926	25
80-179	16500	16	25100	25	19	22	+6	29213	29
180+	0	0	3	0	0	0	--	15	0
TOTAL	102,900	100	100,000	100	100	100		100004	
LOWLANDS									
0-9	200	1	202	1	4	4	-3	512	2
10-39	1400	5	1464	5	5	8	--	1460	5
40-79	5100	17	3979	13	9	4	+4	2681	9
80-119	16800	56	16770	54	52	40	+2	16238	52
120-179	6500	22	8476	27	29	42	-2	9976	32
180+	200	1	307	1	1	2	--	331	1
TOTAL	30,300	100	31,119	100	100	100		31199	100

To meet Decade 1 objectives:

- Increase upland white pine by 1350 acres.
- Increase upland spruce-fir by 3350 acres.
- Decrease upland jack pine by 500 acres. However, given the lack of jack pine on other LEs, the Forest may want to retain this until harvest is necessary in these stands.
- Decrease upland northern hardwoods by 3250 acres and aspen by 1350 acres. Convert to white pine or spruce/fir where feasible.

- Increase upland 0-9 age class by 5185 acres. There is a fair amount of 0-9 planned by not yet accomplished. Even so, the 0-9 would be several percentage points below the objective.
- Increase upland 10-39 age class by 1950 acres.
- Decrease the 80-179 age class by 6100 acres. Even-aged harvests in suitable forest types would create 0-9.

Table BHC-3a. Young Seedling Management Indicator Habitat Objectives for Boreal Hardwood/Conifer Landscape Ecosystem.

Management Indicator Habitat for Boreal Hardwood Conifer Landscape Ecosystem Young Seedling Open (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	12,000	-	3815	-	-	6249	-
2	Upland deciduous	10,600	-	3361	-	-	5604	-
3	Northern hardwoods	200	-	312	+	-	125	-
4	Aspen-birch	10,400	-	3049	-	-	5479	-
5	Upland conifer	1,400	-	454	-	-	645	-
6	Upland spruce-fir	1,000	-	311	-	-	491	-
7	Red and white pine	100	+	138	+	m	89	-
8	Jack pine	300	-	4	-	-	65	-
9	Lowland black Spruce-tamarack	900	+	411	-	+	538	-

Table BHC-3b. Mature Management Indicator Habitat Objectives for Boreal Hardwood/Conifer Landscape Ecosystem

Management Indicator Habitat for Boreal Hardwood Conifer Landscape Ecosystem Mature (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	33,000	-	29692	-	-	26407	-
2	Upland deciduous	26,800	-	25203	-	-	21036	-
3	Northern hardwoods	10,200	+	13634	+	-	12900	+
4	Aspen-birch	16,600	-	11570	-	-	8136	-
5	Upland conifer	6,200	+	4489	-	+	5371	-
6	Upland spruce-fir	4,600	m	2743	-	m	2806	-
7	Red and white pine	1,600	+	1746	+	+	2566	+
8	Jack pine	0	m	0	m	m	0	m
9	Lowland black Spruce-tamarack	12,200	-	10717	-	-	9715	-

Table BHC-3c. Old/Old Growth and Multi-aged Management Indicator Habitat Objectives for Boreal Hardwood/Conifer Landscape Ecosystem

Management Indicator Habitat for Boreal Hardwood Conifer Landscape Ecosystem Old/Old Growth and Multi-aged (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	7,600	+	13053	+	+	15978	+
2	Upland deciduous	6,700	+	11495	+	+	14340	+
3	Northern hardwoods	900	+	1514	+	+	2315	+
4	Aspen-birch	5,700	m	9980	+	+	12025	+
5	Upland conifer	900	+	1558	+	+	1638	+
6	Upland spruce-fir	500	+	1100	+	+	1232	+
7	Red and white pine	200	+	226	+	+	234	+
8	Jack pine	200	-	232	+	-	172	-
9	Lowland black Spruce-tamarack	3,100	+	4008	+	+	4797	+

A large Landscape Ecosystem on the Chippewa National Forest, the Boreal Hardwood Conifer (BHC) LE contains more upland acres than any other LE except for DMPO.

Objectives for upland forest MIH's in this LE are to generally decrease the youngest and increase the oldest, although more young red/white pine is desired.

- Generally meeting young forest MIH objectives, although decade 1 has a little too much northern hardwood regeneration.
- Decade 2 will need more lowland black spruce-tamarack regeneration.
- Most older forest MIH objectives were met in 2011.

Mesic Northern Hardwood Landscape Ecosystem

Table MNH-1. Vegetation Composition Objectives for Mesic Northern Hardwood LE.

Forest Type	FP 2003		2011		Objectives		% difference from 2011 to Decade 1
					Decade 1	Decade 2	
UPLANDS	Acres	%	Acres	%	%	%	
Jack Pine	100	0	117	0	0	0	--
Red Pine	2100	3	1809	3	3	3	--
White Pine	500	1	476	1	1	1	--
Spruce-fir	4000	6	2855	4	6	7	-2
Oak	800	1	634	1	1	1	--
Northern Hdwds	20300	31	24178	37	32	37	+5
Aspen	32000	48	29658	46	47	43	-1
Paper Birch	6800	10	5025	8	10	8	-2
TOTAL	66,400	100	64,751	100	100	100	
LOWLANDS							
Black Spruce	3100	52	2824	42	52	52	-10
Tamarack	500	8	555	8	8	8	--
Lowland Hdwds	1900	31	2269	34	31	31	+3
White Cedar	500	9	1054	16	9	9	+5
TOTAL	6000	100	6,703	100	100	100	

Table MNH-2. Vegetation Age Class Objectives for Mesic Northern Hardwood Landscape Ecosystem.

Age Class	2003		2011		Objectives		% difference from 2011 to Decade 1	2011 + 5 yrs	
					Decade 1	Decade 2			
UPLANDS	Acres	%	Acres	%	%	%		Acres	%
0-9	5300	8	2373	4	5	6	-1	2390	4
10-39	2200	33	20735	32	35	28	-3	19420	30
40-79	24300	37	18795	29	24	26	+5	14588	23
80-119	12800	19	20263	31	32	33	-1	25270	39
120-189	2000	3	2496	4	5	8	-1	2994	5
190+	100	0	90	0	0	0	--	90	0
TOTAL	66,400	100	64,751	100	100	100		64751	100
LOWLANDS									
0-9	<100	0	17	0	1	2	-1	22	0
10-39	100	2	182	3	1	2	+2	172	3
40-79	1400	23	1125	17	12	6	+5	825	12
80-119	3300	55	3779	56	57	51	-1	3824	57
120-179	1200	20	1561	23	28	39	-5	1821	27
180+	<100	0	39	1	0	1	+1	39	1
TOTAL	6100	100	6703	100	100	100		6703	100

To meet Decade 1 objectives:

- Increase spruce-fir and paper birch by 1000 acres and 1500 acres, respectively.
- Decrease northern hardwoods by 3500 acres.
- Decrease aspen by 750 acres.

- Increase 0-9 age class by 850 acres.
- Increase 10-39 age class by 2550 acres.
- Decrease the 40-79 age class by 3267 acres. This could be achieved by some even-aged harvest to create more 0-9 and by leaving some of the 40-79 to grow into the 80-119 age class.
- Increase the 80-119 age class by 450 acres. However this objective will be exceeded early in Decade 2.
- The 120-179 age class will meet the objective by the end of the decade and on trajectory to meet Decade 2 objectives.

Table MNH-3a. Young Seedling Management Indicator Habitat Objectives for Mesic Northern Hardwood Landscape Ecosystem.

Management Indicator Habitat for Mesic Northern Hardwood Landscape Ecosystem Young Seedling Open (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	7200	-	2373	-	-	2390	-
2	Upland deciduous	6800	-	2160	-	-	2188	-
3	Northern hardwoods	300	-	253	-	-	48	-
4	Aspen-birch	6500	-	1907	-	+	2140	-
5	Upland conifer	300	-	213	-	+	202	-
6	Upland spruce-fir	200	-	96	-	+	71	-
7	Red and white pine	200	-	105	-	-	120	-
8	Jack pine	0	m	11	+	m	11	+
9	Lowland black Spruce-tamarack	0	+	10	+	+	23	+

Table MNH-3b. Mature Management Indicator Habitat Objectives for Mesic Northern Hardwood Landscape Ecosystem

Management Indicator Habitat for Mesic Northern Hardwood Landscape Ecosystem Mature (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	30500	-	28352	-	-	26657	-
2	Upland deciduous	29100	-	27148	-	-	24832	-
3	Northern hardwoods	17300	+	20928	+	+	20641	+
4	Aspen-birch	11100	-	6219	-	-	4191	-
5	Upland conifer	1400	+	1204	-	+	1825	+
6	Upland spruce-fir	1000	+	682	-	+	915	-
7	Red and white pine	400	+	522	+	+	909	+
8	Jack pine	0	m	0	m	m	0	m
9	Lowland black Spruce-tamarack	2600	-	2214	-	-	2089	-

Table MNH-3c. Old/Old Growth and Multi-aged Management Indicator Habitat Objectives for Mesic Northern Hardwood Landscape Ecosystem

Management Indicator Habitat for Mesic Northern Hardwood Landscape Ecosystem Old/Old Growth and Multi-aged (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	4800	+	8670	+	+	10809	+
2	Upland deciduous	4300	+	8192	+	+	10222	+
3	Northern hardwoods	1700	+	2366	+	+	2784	+
4	Aspen-birch	2600	+	5826	+	+	7438	+
5	Upland conifer	500	+	478	-	+	587	+
6	Upland spruce-fir	300	+	225	-	+	334	+
7	Red and white pine	200	m	181	-	+	181	-
8	Jack pine	0	m	72	+	m	72	+
9	Lowland black Spruce-tamarack	700	+	844	+	+	993	+

Objectives for the upland forest MIH's are generally to increase the oldest and decrease the youngest, especially in decade 1.

- These objectives were generally met in decade 1, with the exception of upland spruce-fir and red/white pine, which declined by a few acres. Decade 2 provides an opportunity for modest adjustment through careful attention to harvest proposals.

Tamarack Swamp Landscape Ecosystem

Table TSF-1. Vegetation Composition Objectives for Tamarack Swamp Landscape Ecosystem.

Forest Type	FP 2003		2011		Objectives		% difference from 2011 to Decade 1
					Decade 1	Decade 2	
UPLANDS	Acres	%	Acres	%	%	%	
Jack pine	200	1	200	1	1	1	--
red pine	1300	7	1523	8	8	9	--
white pine	<100	0	103	1	1	1	--
spruce-fir	1900	11	2028	10	16	21	-6
oak	200	1	129	1	0	0	+1
Northern Hdwds	2000	11	2944	15	11	11	+4
aspen	10800	61	11309	58	56	49	+2
paper birch	1400	8	1375	7	6	5	+1
TOTAL	17,800	100	19,611	100	100	100	
LOWLANDS							
tamarack	8400	27	8954	29	27	27	+2
Black spruce	14400	47	12216	39	47	47	-12
white cedar	4800	15	6196	20	15	15	+5
lowland hdwds	3200	11	3710	12	11	11	+1
TOTAL	30800	100	31077	100	100	100	

Table TSF-2. Vegetation Age Class Objectives for Tamarack Swamp Landscape Ecosystem.

Age Class	2003		2011		Objectives		% difference from 2011 to Decade 1	2011 + 5 yrs	
					Decade 1	Decade 2			
UPLANDS	Acres	%	Acres	%	%	%		Acres	%
0-9	1200	7	374	2	7	8	-5	482	2
10-39	6500	36	6761	34	42	41	-8	6264	32
40-79	6400	36	5725	29	23	25	+6	4882	25
80-119	3400	19	5662	29	23	19	+6	6426	33
120-189	400	2	1086	6	4	6	+2	1547	8
190+	<100	0	3	0	0	0	--	10	0
TOTAL	17,800	100	19,611	100	100	100		19612	100
LOWLANDS									
0-9	300	1	253	1	4	4	-3	333	1
10-39	1300	4	1153	4	4	6	--	1161	4
40-79	5600	18	4740	15	11	8	+4	3647	12
80-119	17300	56	15884	51	47	35	+4	15078	49
120-179	6100	20	8861	29	34	46	-5	10644	34
180+	200	1	164	1	1	1	--	193	1
TOTAL	30,800	100	31,077	100	100	100		31077	100

To meet Decade 1 objectives:

- Increase spruce-fir by 1100 acres.
- Decrease northern hardwoods by 800 acres, aspen by 350 acres, and paper birch by 2000 acres. This would provide opportunities to increase the amount of spruce-fir.

- Increase 0-9 age class by 1000 acres.
- Increase 10-39 age class by 1450 acres.
- Decrease the 40-79 age class by 4550 acres.
- Decrease the 80-119 age class by 1150 acres.
- Decrease the 120-179 age class by 300 acres.

Table TDF-3a. Young Seedling Management Indicator Habitat Objectives for Tamarack Swamp Landscape Ecosystem.

Management Indicator Habitat for Tamarack Swamp Landscape Ecosystem Young Seedling Open (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	1700	-	374	-	-	482	-
2	Upland deciduous	1500	-	342	-	-	476	-
3	Northern hardwoods	100	-	14	-	-	19	-
4	Aspen-birch	1400	-	327	-	-	458	-
5	Upland conifer	200	+	32	-	+	5	-
6	Upland spruce-fir	100	-	27	-	-	2	-
7	Red and white pine	200	m	6	-	m	3	-
8	Jack pine	100	-	0	-	+	0	-
9	Lowland black Spruce-tamarack	700	+	404	-	+	454	-

Table TSF-3b. Mature Management Indicator Habitat Objectives for Tamarack Swamp LE.

Management Indicator Habitat for Tamarack Swamp Landscape Ecosystem Mature (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	6200	-	6448	+	-	5429	-
2	Upland deciduous	4700	-	4787	+	-	3727	-
3	Northern hardwoods	1300	+	2213	+	m	1960	+
4	Aspen-birch	3300	-	2574	-	-	1767	-
5	Upland conifer	1500	m	1661	+	m	1703	+
6	Upland spruce-fir	1200	-	973	-	-	824	-
7	Red and white pine	300	+	688	+	+	879	+
8	Jack pine	0	m	0	m	m	0	m
9	Lowland black Spruce-tamarack	15700	-	12926	-	-	11853	-

Table TSF-3c. Old/Old Growth and Multi-aged Management Indicator Habitat Objectives for Tamarack Swamp Landscape Ecosystem

Management Indicator Habitat for Tamarack Swamp Landscape Ecosystem Old/Old Growth and Multi-aged (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	2000	+	4376	+	+	5780	+
2	Upland deciduous	1400	+	3326	+	m	4530	+
3	Northern hardwoods	100	+	577	+	+	1012	+
4	Aspen-birch	1300	+	2749	+	-	3518	+
5	Upland conifer	500	+	1050	+	+	1250	+
6	Upland spruce-fir	100	+	581	+	+	772	+
7	Red and white pine	300	+	366	+	+	376	+
8	Jack pine	0	m	103	+	-	103	+
9	Lowland black Spruce-tamarack	4100	+	5782	+	+	7079	+

The Tamarack Swamp LE is relatively small, dominated by tamarack and lowland spruce. Objectives are generally to decrease young deciduous and increase young conifer.

- Young deciduous goal is being met.
- Young lowland black spruce-tamarack forests are lacking.

Objectives include an increase in the oldest red/white pine, upland spruce-fir, and lowland black spruce-tamarack, while aspen-birch objective is to decrease.

- ➢ Conifers are trending in the right direction.

White Cedar Swamp Landscape Ecosystem

Table WCS-1. Vegetation Composition Objectives for White Cedar Swamp Landscape Ecosystem.

Forest Type	FP 2003		2011		Objectives		% difference from 2011 to Decade 1
					Decade 1	Decade 2	
UPLANDS and LOWLANDS	Acres	%	Acres	%	%	%	
Jack pine			23	0			n/a
red pine	0	0	31	0	0	0	--
spruce-fir	500	3	384	3	6	8	-3
oak	0	0	16	0	0	0	--
No. hardwoods	200	1	552	1	2	2	-1
aspen	8100	62	7,975	62	57	52	+5
paper birch	0	0	214	2	0	0	+2
black spruce	1100	8	968	8	8	8	--
tamarack	100	1	109	1	1	1	--
lowland hdwds	2300	18	1,749	14	18	18	-4
white cedar	800	6	862	7	9	11	-2
TOTAL	13,900	100	12,883	100	100	100	

Table WCS-2. Vegetation Age Class Objectives for White Cedar Swamp Landscape Ecosystem.

Age Class	2003		2011		Objectives		% difference from 2011 to Decade 1	2011 + 5 yrs	
					Decade 1	Decade 2			
	Acres	%	Acres	%	%	%		Acres	%
0-9	1400	11	829	6	6	6	--	493	4
10-49	4400	34	4960	39	46	49	-7	5537	43
50-79	2900	22	2348	18	11	6	+7	1671	13
80-109	2500	19	2396	19	16	12	+3	2399	19
110-139	1300	10	1829	14	15	18	-1	2014	16
140+	600	4	521	4	6	9	-2	767	6
TOTAL	13,100	100	12,883	100	100	100		12883	100

To meet Decade 1 objectives:

- Increase upland spruce-fir by 400 acres.
- Increase upland northern hardwoods by 300 acres.
- Increase lowland northern hardwoods by 550 acres.
- Decrease upland aspen by 600 acres.

- Decrease upland paper birch by 200 acres

- Increase upland 10-49 age class by 950 acres.
- Decrease the 50-79 age class by 950 acres.
- Decrease the 80-109 age class by 350 acres.
- Increase the 110-139 age class by 100 acres.
- Increase the 140+ age class by 250 acres.

This is the only LE in which the 0-9 age class is being met. Continue even-aged harvests to maintain the amount of 0-9.

Table WCS-3a. Young Seedling Management Indicator Habitat Objectives for White Cedar Swamp Landscape Ecosystem.

Management Indicator Habitat for White Cedar Swamp and Semi-terrestrial White Cedar Landscape Ecosystem Young Seedling Open (Acres)								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	1800	-	815	-	-	489	-
2	Upland deciduous	1800	-	781	-	-	453	-
3	Northern hardwoods	0	m	0	m	m	0	m
4	Aspen-birch	1800	-	781	-	-	453	-
5	Upland conifer	0	m	34	+	m	36	+
6	Upland spruce-fir	0	m	34	+	m	36	+
7	Red and white pine	0	m	0	m	m	0	m
8	Jack pine	0	m	0	m	m	0	m
9	Lowland black Spruce-tamarack	0	m	29	+	m	5	+

Table WCS-3b. Mature Management Indicator Habitat Objectives for White Cedar Swamp Landscape Ecosystem

Management Indicator Habitat for White Cedar Swamp and Semi-terrestrial White Cedar Landscape Ecosystem Mature (Acres) Shaded cell = not moving towards FP objective								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	2500	-	2240	-	-	1715	-
2	Upland deciduous	2300	-	2087	-	-	1546	-
3	Northern hardwoods	200	m	225	+	-	204	m
4	Aspen-birch	2100	-	1862	-	-	1343	-
5	Upland conifer	300	-	153	-	-	169	-
6	Upland spruce-fir	300	-	145	-	-	140	-
7	Red and white pine	0	m	8	m	m	28	+
8	Jack pine	0	m	0	m	m	0	m
9	Lowland black Spruce-tamarack	900	-	758	-	-	698	-

Table WCS-3c. Old/Old Growth and Multi-aged Management Indicator Habitat Objectives for White Cedar Swamp Landscape Ecosystem

Management Indicator Habitat for White Cedar Swamp and Semi-terrestrial White Cedar Landscape Ecosystem Old/Old Growth and Multi-aged (Acres)								
#	Management Indicator Habitats	2004 Forest Plan	Plan Obj Decade 1	2011	Trend	Plan Obj Decade 2	2016	Trend
1	Upland forest	400	+	1293	+	+	1552	+
2	Upland deciduous	300	+	1244	+	+	1502	+
3	Northern hardwoods	0	m	336	+	m	356	+
4	Aspen-birch	300	+	908	+	+	1145	+
5	Upland conifer	0	m	50	+	+	51	+
6	Upland spruce-fir	0	m	27	+	+	28	+
7	Red and white pine	0	m	0	m	m	0	m
8	Jack pine	0	m	23	+	m	23	+
9	Lowland black Spruce-tamarack	200	+	261	+	+	317	+

A small LE on the Chippewa National Forest, suggesting some MIH's may be relatively uncommon or rare. General objectives include a desire to reduce aspen and increase cedar and spruce-fir, as well as decreasing the very young and increasing the very old.
Trends in all age MIH's are very close to objectives.

Highlights of LE MIH Opportunities

- **Upland Deciduous Forest**
  - About 76% (66,116/86,521 acres) of the mature and older aspen-birch on the Forest occurs within the DMP, DMPO, and BHC LE's.
    - The largest amount (28,226 acres) of this exists within the DMPO LE. Some regeneration of aspen-birch from mature and older forest to young forest could occur within the LE, and still meet MIH objectives. Conversions into less represented forest types from these forest types should also be considered.
      - Acres of old/old growth multi-aged aspen-birch MIH are currently increasing within the DMPO LE, rather than decreasing according to the objective. A surplus of at least 8,660 acres currently exists.
    - There is also some opportunity within the DMP and BHC LE's to regenerate aspen-birch from mature and older forests to young forest, and still meet MIH objectives.

- **Upland Coniferous Forest**
  - Although young jack pine forests are lacking in the DP and DMPO LE's, Forest Plan Standard S-WL-10 is currently not being met (see Forest-wide Interpretations and Conclusions). This suggests an issue with regeneration harvests of mature and older jack pine to young jack pine through 2014.
    - The majority of over-abundant mature and older forests are deciduous, particularly the aspen forest type. Conversion from other forest types to jack pine is a Forest Plan expectation.
    - Mature and older red and white pine forest beyond the minimum required to meet LE MIH objectives and Forest Plan Standard S-WL-9 are dispersed in relatively small amounts in 6 LE's (DP, DMP, DMPO, BHC, MNH, TS) (See Forest-wide Interpretations and Conclusions). If these forest stands are viewed as a good source of regeneration activities to either create young red and white pine forest or young jack pine forest, care should be taken not to overharvest and reverse successful LE MIH trends.

- **Lowland Coniferous Forest**
  - About 85% (45,150/53,027 acres) of the mature and older lowland black spruce-tamarack MIH on the Forest occurs within the DMPO, BHC, and TS LE's.
    - These LE's are all currently lacking in the young (0-19 years old) age class and increasing in mature+ age classes. Some regeneration in especially the mature age class to create young forest could occur within each of these LE's, and still meet MIH objectives.